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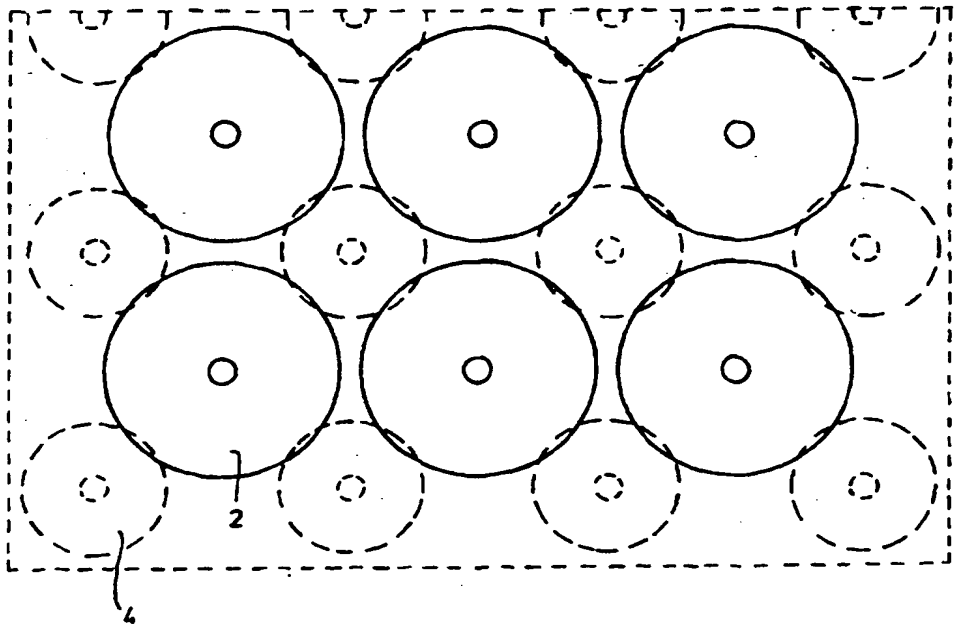
(54) Title: A MAT AS A SUPPORT FOR PERSONS IN A STANDING WORKING POSTURE



(57) Abstract

A mat of elastic material as a support for persons in a standing working posture has a pattern of punctiformed upwardly extending portions (2) on the upper side. The underside of the mat has a pattern of downwardly extending punctiformed portions (4) by means of which the mat rests on a support. The two sets of patterns (2, 4) are mutually offset so that, figuratively speaking, the portins on the upper side float between the supporting portions on the underside. The mat has an excellent standing comfort and lends itself extremely well for use in industries having strict hygiene requirements, such as in the food processing and drug industries.

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influence on the comfort properties of the mat. The flatter the sides on the portions are, the more these can overlap each other, as the thickness in the area of overlap is not increased considerably.

Further, the mat has better drain properties because of the punctiformed supporting portions and may be placed arbitrarily with respect to a given liquid flow on the floor, where a rib pattern has to be oriented in the direction of flow to allow the water to run inwardly below the mat. Owing to accumulation of dirt and growth sites for bacteria, fungi and microorganisms in general, it is decisive that the contact with the floor is as minimal as possible. Apart from the fact that the mat per se must be easy to clean, the punctiformed supporting portions also facilitate cleaning of the floor below it.

The geometry of the punctiformed portions may vary widely and does not have to be the same on the upper side and the underside. Examples of geometrical shapes include squares, trapeziums, triangles, spherical segments, polygons and cones, just to mention a few.

Portions on the underside of the mat terminating in a tip have been found to possess a not quite satisfactory antiskid property in certain situations. Therefore, portions having a certain longitudinal extent are selected to improve the antiskid property, and the portions are angled mutually, optionally grouped, to provide a uniform antiskid property in all directions. If just the longitudinal extent of the portions is not too great, the comfort of the mat will not be affected noticeably.

An embodiment of the invention will be described more fully below with reference to the accompanying drawing, in which:

A mat as a support for persons in a standing working posture

The invention concerns a mat as a support for persons in a standing working posture and comprising a carrier layer having a pattern of upwardly extending portions on the upper side and a pattern of downwardly extending portions on the underside by means of which the mat rests on a support, said two patterns being mutually offset.

Elastically resilient mats as a support for persons in a standing working posture to counteract fatigue and injuries to legs and spine are known. A mat of the above type is described in the Danish Patent Application No. 348/93, wherein the two patterns are formed by continuous ribs on the upper side and underside of the mat. The ribs on the upper side are arranged in the spaces between the ribs on the underside and are narrower than the spaces, whereby tension is generated in the free carrier layer section on each side of the ribs when stepping on these.

The invention provides a mat of the type stated in the opening paragraph having a punctiformed pattern on the upper side and the underside. This embodiment has been found to give a better standing comfort, as it yields resiliently in the punctiformed areas and non in line-shaped areas determined by a rib pattern, i.e. the mat can better adapt to the foot pressure thereon. The properties are moreover uniform irrespective of the direction in which the feet are oriented on the mat, while this is not the case with a rib pattern where the properties are noticeably different in the longitudinal direction of the ribs than in the transverse direction. It is noted that a minor overlap of the portions on the upper side and the underside, particularly where the portions are formed with inclined sides, has been found to have no noticeable

is supported by four cones 4 on the underside thereof. As shown, the cones on the underside of the mat are tangent to the cones on the underside figuratively speaking, as they are separated by the carrier layer 6. Thus, there are no direct supports below the tread cones 4 on the underside of the mat, i.e. they float between the supporting cones 4 on the underside of the mat. A foot pressure on the tread cones 2 will press these elastically down between the supporting cones 4, thereby creating elastic tensile stresses in the carrier layer 6. The point-shaped pattern ensures good adaptation to the footprint on the mat, as the shape of the mat conforms to the print in points. The circumstance that the cones on the underside of the mat rest on the support 8 with their tips, also contributes to improving the good elastic properties of the mat. Further, it provides the smallest possible contact face with the floor, thereby reducing growth sites for bacterial fungi and microorganisms in general, and dust entrained by a flow of water below the mat does not easily stick to the downwardly directed cones. Also, the cone pattern ensures a substantially free flow below the mat.

At locations where the floor is slippery and perhaps also wet, it may be difficult to obtain a sufficient resistance to skidding. The friction may be increased by making the surface of the supporting cones larger.

Figs. 5 and 6 show a pattern on the mat underside having elongate portions 10, which provide an improved antiskid property. The portions are arranged in groups of three, said groups being perpendicular to each other. The upper side of the mat may have a truncated cone pattern 2 like before, there being three truncated cones 2 between two parallel portions 10. Irrespective of the direction, the truncated cones 2 will be perceived as being provided be-

fig. 1 shows a section of a mat seen directly from above,

fig. 2 shows a section of the mat seen directly from below,

fig. 3 shows an enlarged section of the mat pattern on the upper side and the underside, the pattern on the underside being shown in dashed line,

fig. 4 shows a section of the mat seen directly from the side,

fig. 5 shows a section like in fig. 3, where the mat is provided with a different pattern on the underside consisting of elongate portions, and

fig. 6 shows a section of the mat shown in fig. 5.

Fig. 1 of the drawing shows a full scale section of the mat seen directly from above. It appears that the upper side has a pattern of closely spaced cones 2 or rather truncated cones as the outer tip is absent. Between these cones 2 the mat has a pattern on the underside consisting of a another set of more widely spaced cones, as shown in full scale in fig. 2. The shapes of the cones are identical, but the cones on the underside of the mat are not as high as on the upper side. The dimensions appear from fig. 4 of the drawing, which shows an enlarged section of the mat seen directly from the side, and in which the carrier layer is designated 6.

Fig. 3 of the drawing shows an enlarged section of the mat seen directly from above, where the cones on the upper side of the mat are shown in dashed line. As appears from the figure, each cone 2 on the upper side of the mat

P a t e n t C l a i m s :

1. A mat as a support for persons in a standing working posture and comprising a carrier layer (6) having a pattern of upwardly extending portions (2) on the upper side and a pattern of downwardly extending portions (4, 10) on the underside by means of which the mat rests on a support (8), said two patterns being mutually offset, c h a r a c t e r i z e d in that the portions are punctiformed.

2. A mat according to claim 1, c h a r a c t e r i z e d in that the punctiformed portions (2, 4, 10) touch or substantially touch each other in a common plane.

3. A mat according to claim 1 or 2, c h a r a c t e r i z e d in that the portions are conical or frustoconical.

4. A mat according to claim 1, 2 or 3, c h a r a c t e r i z e d in that the punctiformed portions (4) on the underside are smaller than the punctiformed portions on the upper side (2).

5. A mat according to any one of claims 1-4, c h a r a c t e r i z e d in that the end face on the punctiformed portions (4) on the underside thereof is relatively large to provide a great antiskid property.

6. A mat according to any one of claims 1-5, c h a r a c t e r i z e d in that the portions (10) on the underside of the mat are elongated to provide a great antiskid property.

tween the elongate portions 10, whose height correspond to the height of the truncated cones 2. The transition between the portions 10 and the intermediate layer 6 is rounded to avoid notch effects. The total width of the portions almost corresponds to the base diameter of the truncated cones.

It will be appreciated that the upper side may be formed with a corresponding pattern of elongate portions, and that a combination of elongate and truly dot-shaped portions may be provided on both the underside and the upper side. In the pattern, the elongate portions may just as well be arranged at an inclined angle, e.g. 45^{o} with respect to each other. The invention thus provides a mat having an excellent comfort for standing persons, said mat lending itself extremely well for use in the food processing industry and the drug industry where the hygiene requirements are very strict, but, of course, the mat may also be used elsewhere.

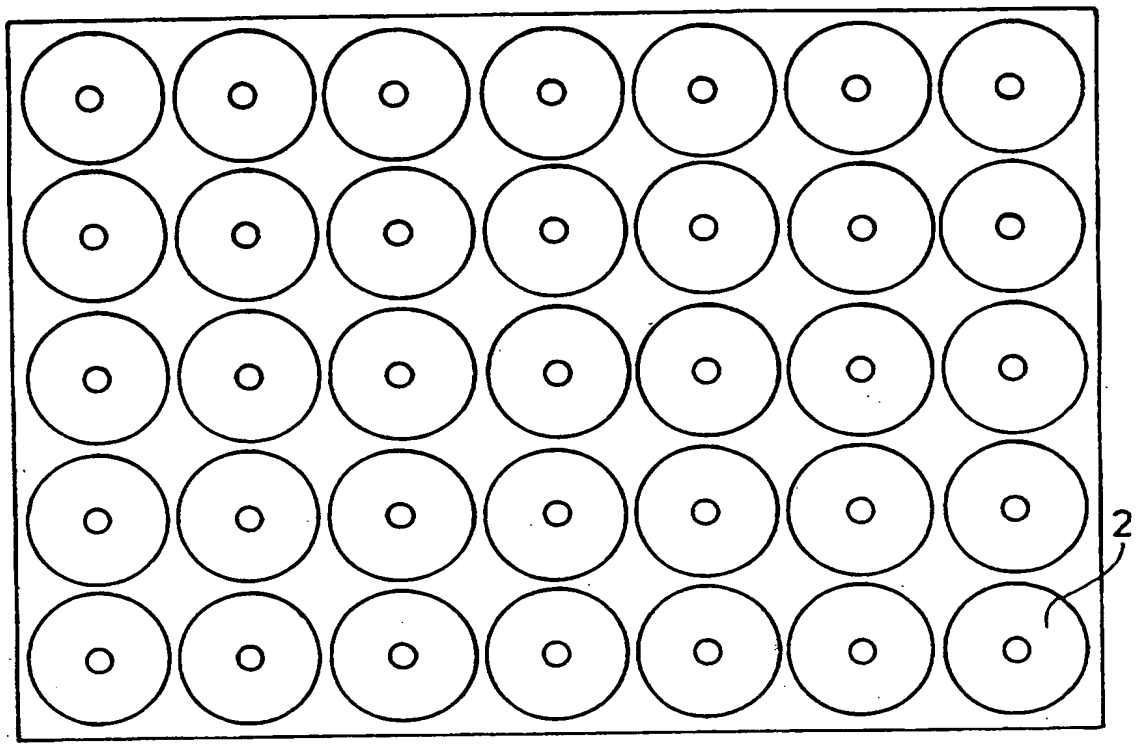

FIG.1

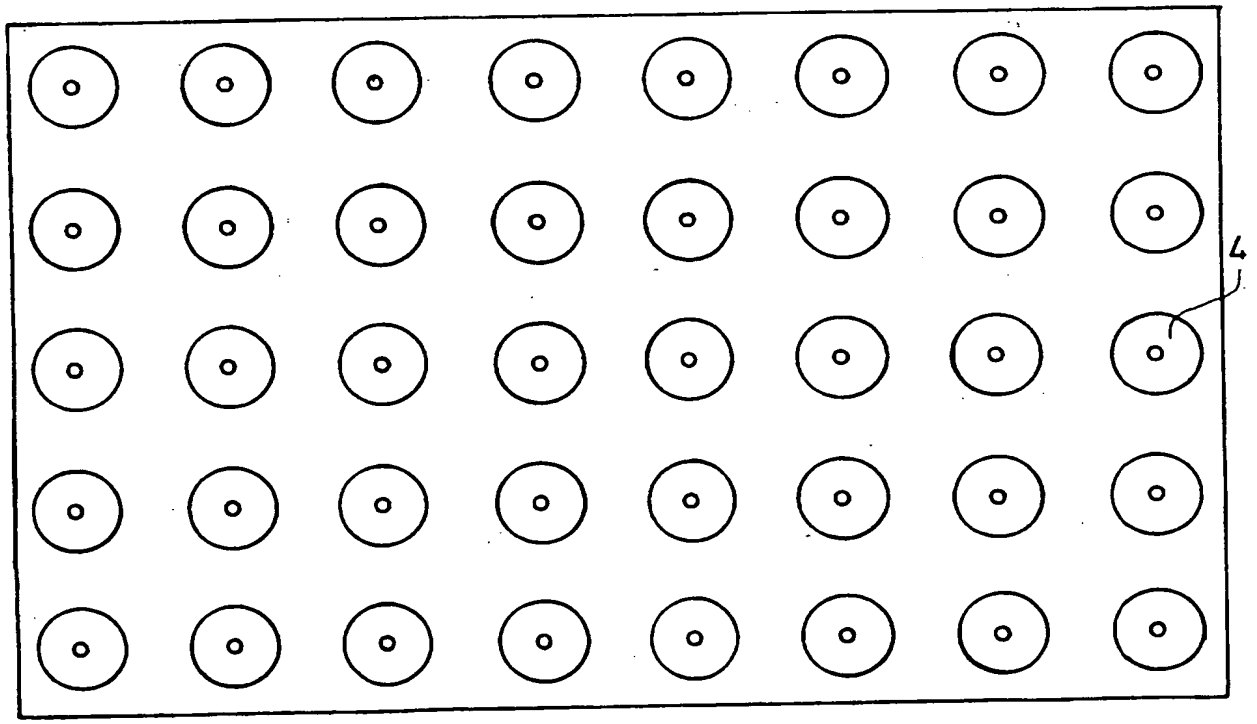

FIG.2

7. A mat according to any one of claims 1-6 having non-rotationally symmetrical portions, c h a r a c t e r i z e d in that these are gathered in groups which are angled with respect to each other to provide a great antiskid property.

8. A mat according to any one of claims 1-7, c h a r a c t e r i z e d in that the portions (10) on the underside of the mat are short ribs gathered in groups of three which are angled 90° with respect to each other.

9. A mat according to claim 8, c h a r a c t e r i z e d in that length of each short rib (10) corresponds to three portions (2) on the upper side of the mat.

10. A mat according to claim 9, c h a r a c t e r i z e d in that the punctiformed portions (2) on the upper side are conical or frustoconical.

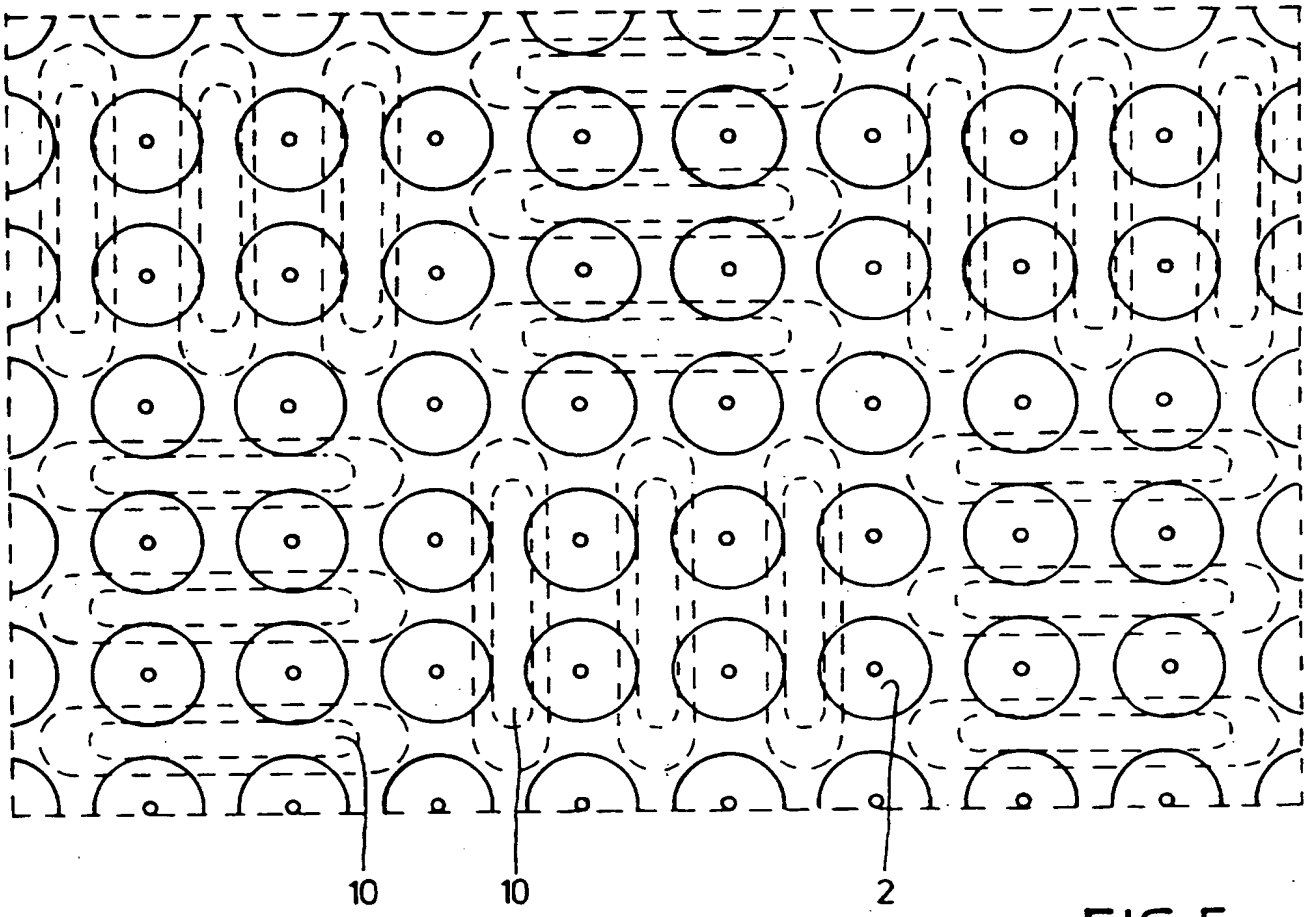

FIG.5

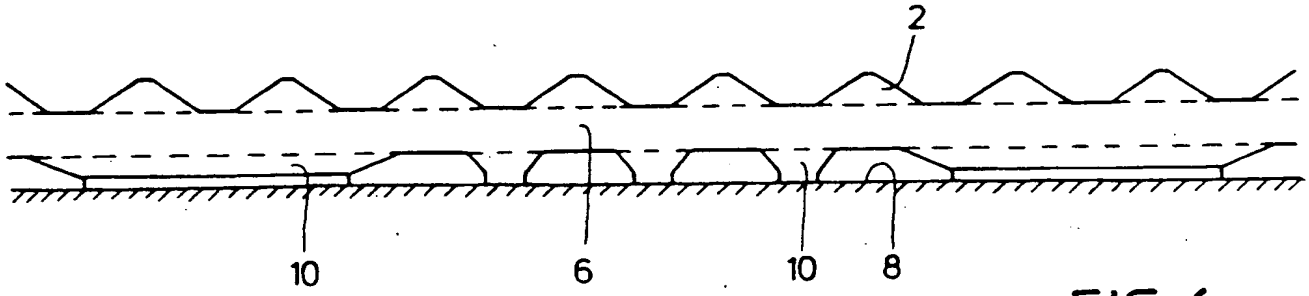

FIG.6

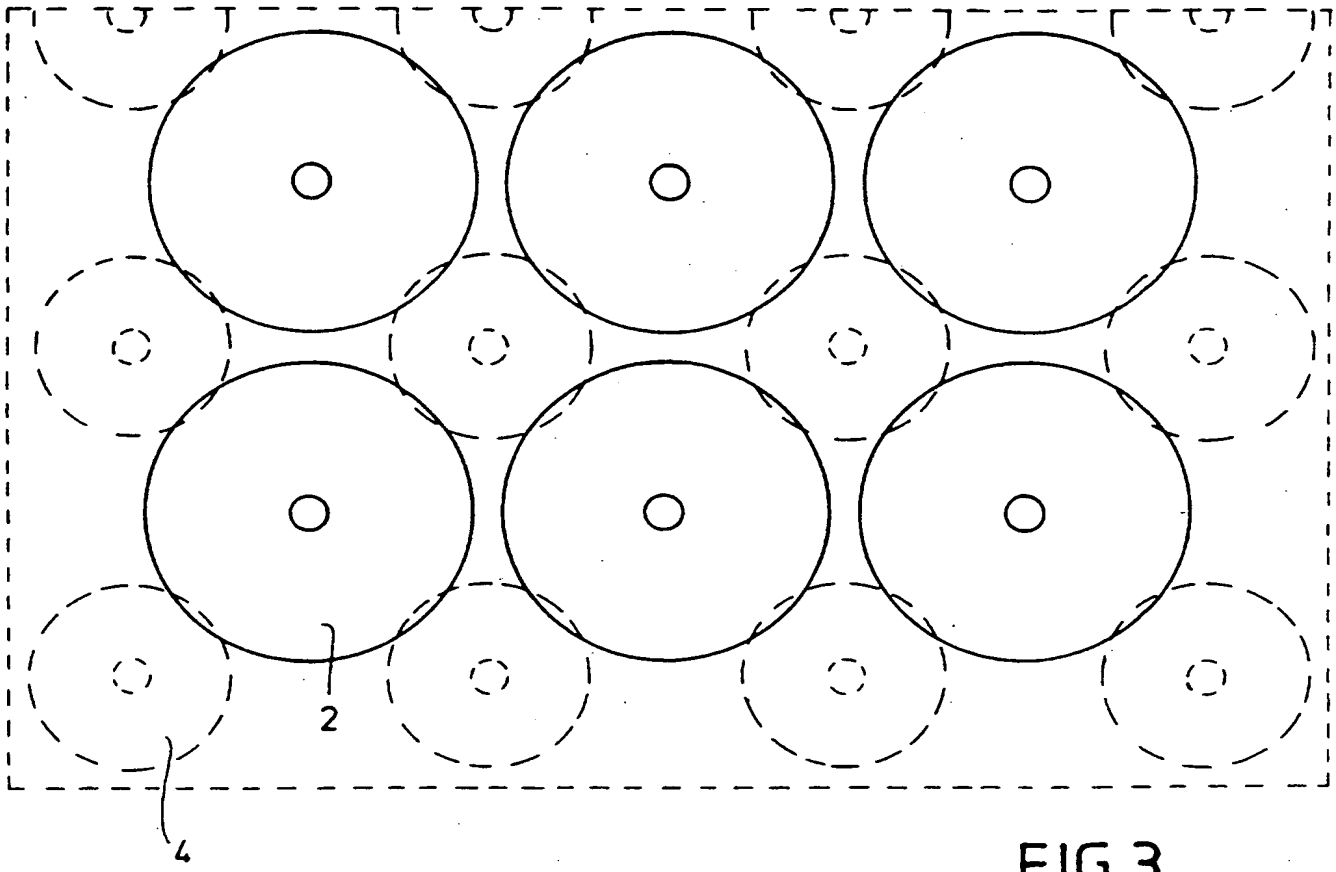

FIG.3

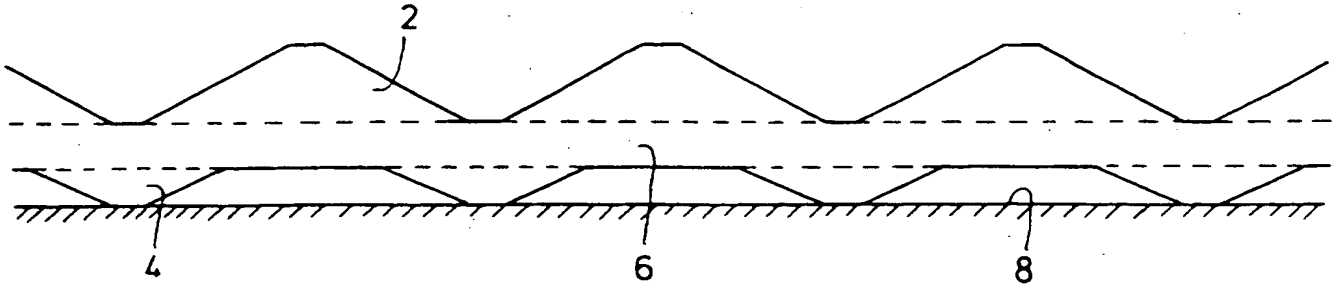

FIG.4

INTERNATIONAL SEARCH REPORT

Information on patent family members

05/02/96

International application No.
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DK-B1- 170603	26/09/94	NONE	
SE-A- 104758	16/06/42	NONE	
DE-A- 2029363	22/07/71	SE-B- 363968	11/02/74
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		WO-A- 8809448	01/12/88
		JP-A- 63294803	01/12/88
FR-A1- 7532271	20/05/77	NONE	
GB-A- 983445	17/02/65	NONE	

INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER

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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: A47G

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DK 170603 B1 (KG PRODUCTION APS), 26 Sept 1994 (26.09.94)	1,2,4,5
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A	SE 104758 A (BJURHAGENS FABRIKERS AKTIEBOLAG), 16 June 1942 (16.06.42)	1-10
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A	DE 2029363 A (SICKEL, HELMUT), 22 July 1971 (22.07.71)	
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[X] Further documents are listed in the continuation of Box C. [X] See patent family annex.

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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